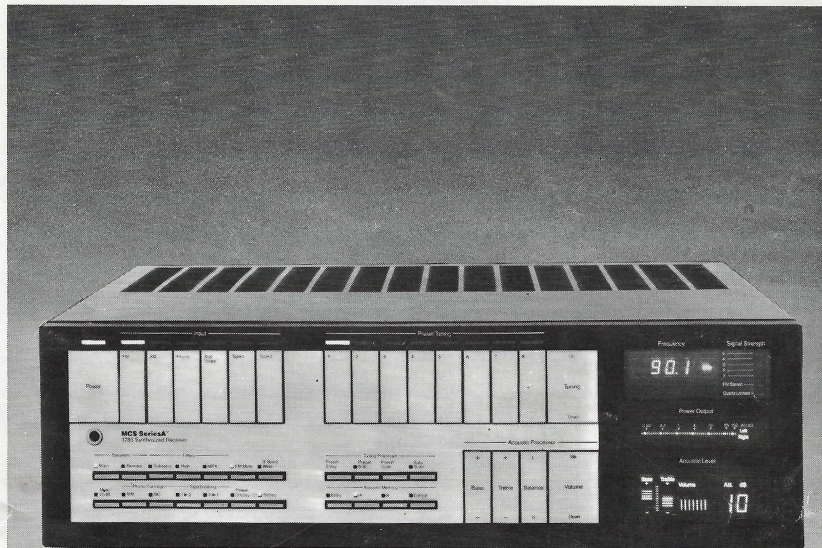


Stereo Receiver

MCS Series A™ Model 3285



Owner's Manual

JCPenney

Dear Audiophile:

The product you have purchased has been carefully engineered and manufactured to give you dependable operation. Read this manual thoroughly before operating your unit to become familiar with its features, and to assure your obtaining the performance that will bring you continued enjoyment. Should you require technical assistance please contact your local JCPenney store, Catalog desk or Product Service center. Retain this manual for future reference.

Contents

1	Introduction	10	Hints for Good Performance
2	Specifications	11	Circuit Protection
2	Packing List	11	Trouble Shooting
2	Precautions	11	Maintenance
4	Connections	11	Service
7	Controls	12	Glossary
8	Operation		

Warning:

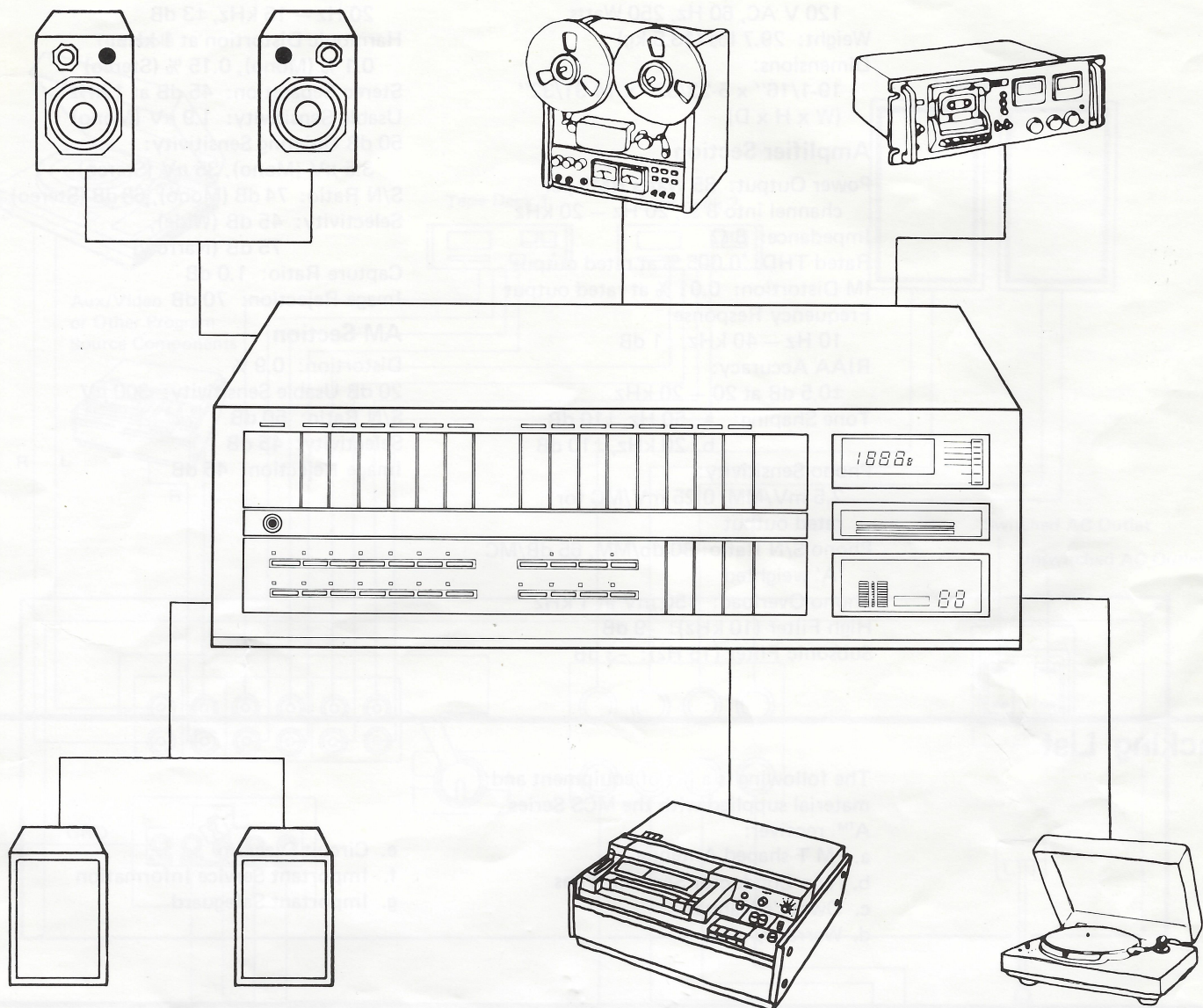
To prevent fire or shock hazard do not expose this appliance to rain or moisture.

Model No. 3285

Serial No. _____

Record and retain these numbers which are located on back of the unit.

The System



Introduction

The receiver is the "heart" of your stereo system. You can connect to the receiver two pairs of speakers, one turntable, two tape decks, an auxiliary program source and various antennas for enhanced performance.

Your receiver Model 3285 incorporates very unique features. New high speed switching technology has succeeded in eliminating total harmonic distortion and supplies 85W per channel out-put power with no more than 0.005% THD. Large scale intergrated circuit feather-touch electronic control; acoustic memory, 16 station preset station memory bank, random FM/AM station recall.

Each component of the system has its Owner's Manual describing in detail the features and functions of the unit. Before operating the system, it is recommended that you read through each manual and acquaint yourself with the features of the particular component.

Specifications

General

Power Requirements:

120 V AC, 60 Hz, 250 Watts

Weight: 29.7 lbs (13.5 kg)

Dimensions:

19-1/16" x 5-23/32" x 14-31/32"

(W x H x D)

Amplifier Section

Power Output: 85 Watts RMS per channel into 8 Ω , 20 Hz – 20 kHz

Impedance: 8 Ω

Rated THD: 0.005 % at rated output

IM Distortion: 0.01 % at rated output

Frequency Response:

10 Hz – 40 kHz, ± 1 dB

RIAA Accuracy:

± 0.5 dB at 20 – 20 kHz

Tone Shaping: a. 50 Hz, ± 10 dB

b. 20 kHz, ± 10 dB

Phono Sensitivity:

2.5 mV/MM, 0.25 mV/MC for rated output

Phono S/N Ratio: 80 dB/MM, 65 dB/MC

'A' weighted

Phono Overload: 150 mV at 1 kHz

High Filter (10 kHz): -9 dB

Subsonic Filter (15 Hz): -3 dB

FM Section

Frequency Response:

20 Hz – 15 kHz, ± 3 dB

Harmonic Distortion at 1 kHz:

0.1 % (Mono), 0.15 % (Stereo)

Stereo Separation: 45 dB at 1 kHz

Usable Sensitivity: 1.9 μ V (Mono)

50 dB Quieting Sensitivity:

3.5 μ V (Mono), 35 μ V (Stereo)

S/N Ratio: 74 dB (Mono), 68 dB (Stereo)

Selectivity: 45 dB (Wide),
75 dB (Narrow)

Capture Ratio: 1.0 dB

Image Rejection: 70 dB

AM Section

Distortion: 0.9 %

20 dB Usable Sensitivity: 300 μ V

S/N Ratio: 50 dB

Selectivity: 45 dB

Image Rejection: 45 dB

Packing List

The following is a list of equipment and material supplied with the MCS Series

ATM receiver:

a. FM T-shaped Antenna

b. Twin Conductor Separable Wires

c. Owner's Manual

d. Warranty

e. Circuit Diagram

f. Important Service Information

g. Important Safeguard

Precautions

Placement

Place the unit on a level surface convenient to an AC outlet supplying ordinary household current (120 V 60 Hz).

Caution: Connecting the unit to any voltage other than 110 – 120 V 60 Hz AC, may damage the unit.

Avoid placing unit in direct sunlight or close to heat radiating appliances such as electric heaters.

Do not keep unit on top of other stereo equipment that radiates much heat.

Keep unit away from areas subject to constant vibration. Avoid placing unit in areas of high humidity or moisture.

When mounting the unit on a shelf, ensure that its supports are secure.

Ventilation

Install the unit where there is good air circulation.

Do not obstruct the ventilation openings of the cabinet.

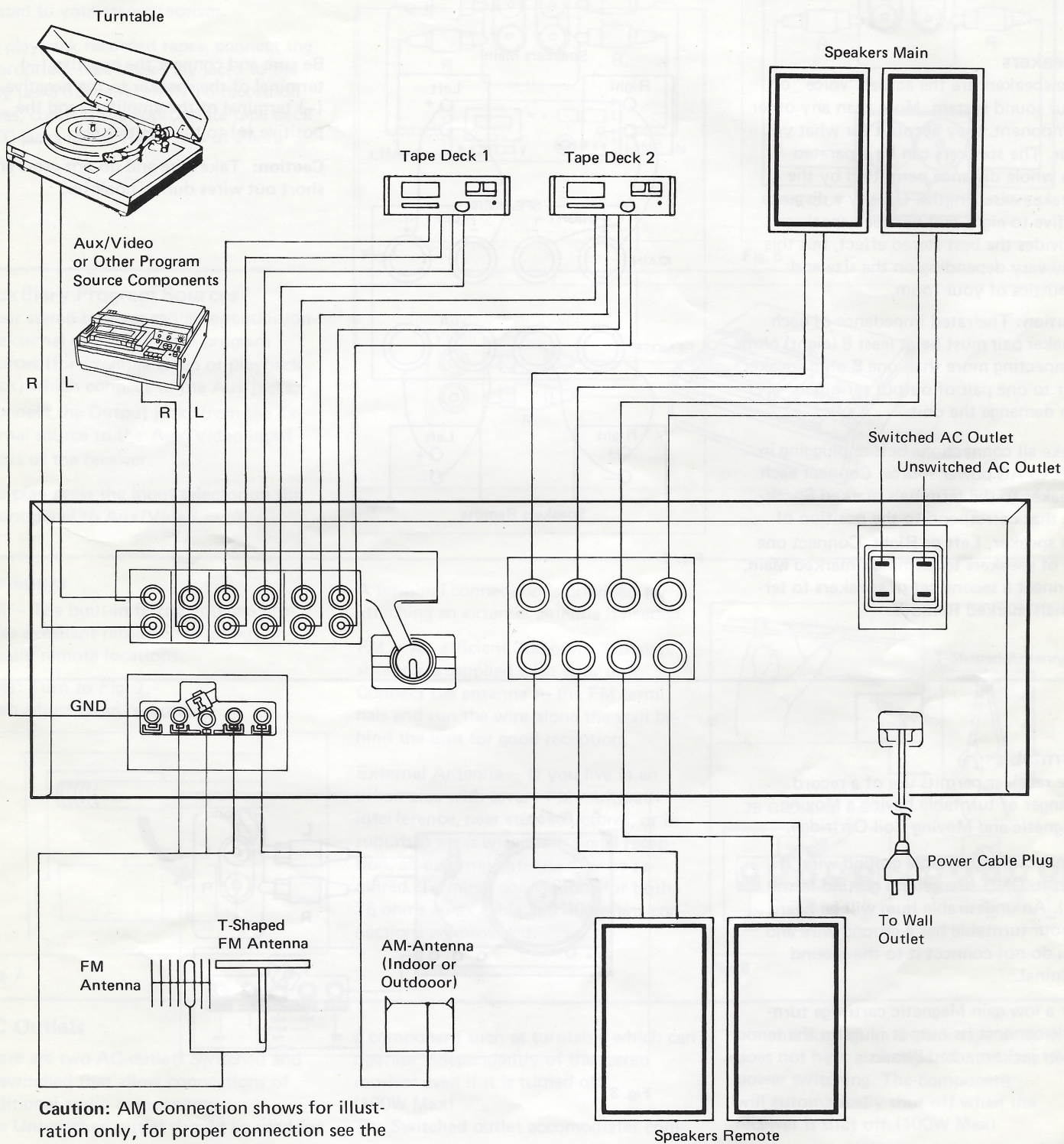


Fig. 1 Rear Panel Connections

Connections

Refer to Fig. 1 and 2 for rear panel connections.

Speakers

The speakers are the actual "voice" of your sound system. More than any other component, they account for what you hear. The speakers can be separated the whole distance permitted by the speaker wire lengths. Usually a distance of five to eight feet between speakers provides the best stereo effect, but this may vary depending on the size and acoustics of your room.

Caution: The rated impedance of each speaker pair must be at least 8 (eight) ohms. Connecting more than one 8 ohm speaker pair to one pair of output terminals can damage the unit.

Make all connections before plugging in unit to AC power source. Connect each speaker to the terminals marked **Speakers** that correspond to the position of the speaker, **Left** or **Right**. Connect one set of speakers to terminals marked **Main**. Connect a second set of speakers to terminals marked **Remote**.

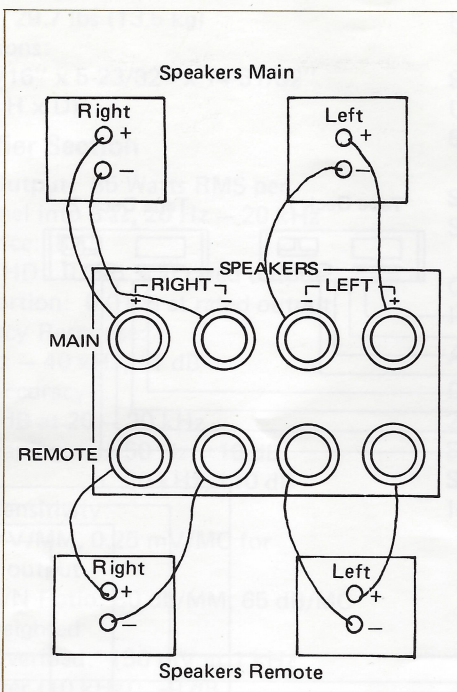


Fig. 2

Be sure and connect the negative (—) terminal of the speaker to the negative (—) terminal of the amplifier, and the positive (+) to the positive (+).

Caution: Take care and do not cross and short out wires during hook up.

Turntables

The receiver permits use of a record changer or turntable having a Moving Magnetic and Moving Coil Cartridge.

Connect the turntable ground wire, if any, to **GND** (the phono ground terminal). An undesirable hum will be heard if your turntable has a ground wire and you do not connect it to the ground terminal.

For a low gain Magnetic cartridge turntable connect its output plugs to the receiver jacks marked **Phono**.

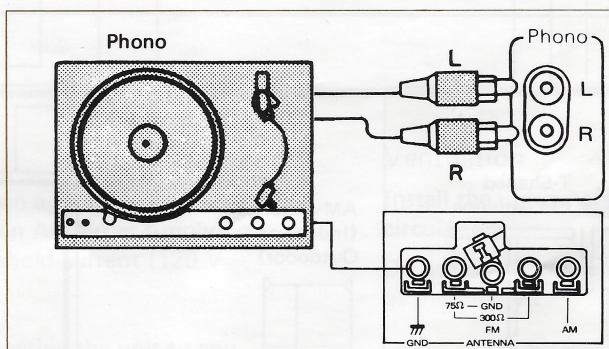


Fig. 3

Plug the turntable into the **Unswitched AC** outlet of the receiver. To play, press the input selector, on the front panel, to the applicable **Phono** position. If a hum is heard try reversing the turntable power plug in the outlet.

Tape Recorders and Decks

Any conventional reel-to-reel 8 track recorder, or cassette deck may be connected to your stereo receiver.

To playback recorded tapes, connect the appropriate tape deck **Play** jacks to the **Play** jacks of the receiver. To record on tapes, connect the appropriate tape deck **REC** jacks to the **REC** jacks of the receiver.

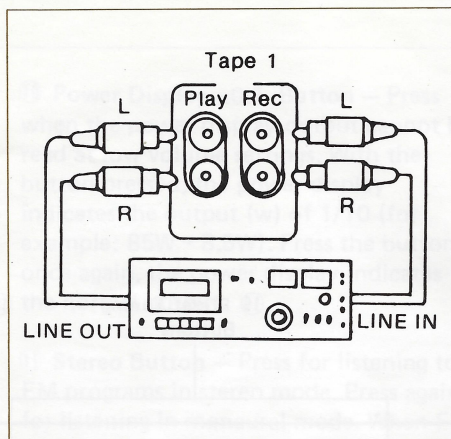


Fig. 4

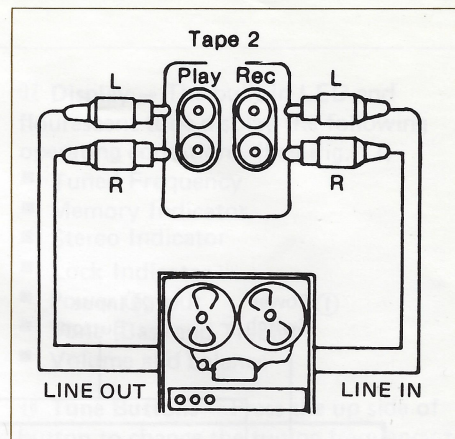


Fig. 5

Auxiliary Program Sources

Your stereo receiver can accept additional external mono or stereo program sources (for example video or playback deck) which connect to the Aux jacks. Connect the **Output** jacks from the external source to the **Aux/Video** input jacks of the receiver.

To play press the input selector on the front panel to **Aux/Video**.

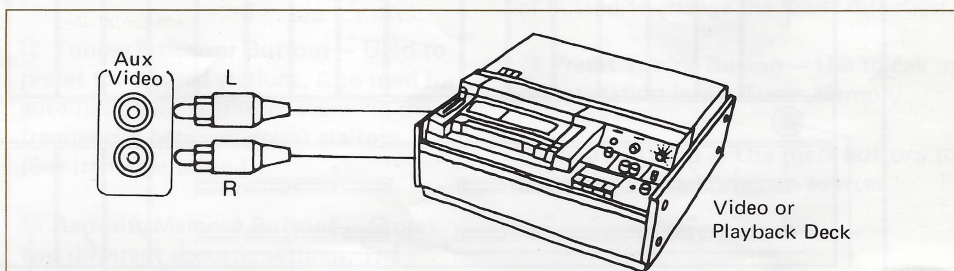


Fig. 6

Antennas

AM — The built-in ferrite antenna provides excellent reception in all but unusually remote locations.

Note: Turn to Fig. 7. Then adjust clean reception.

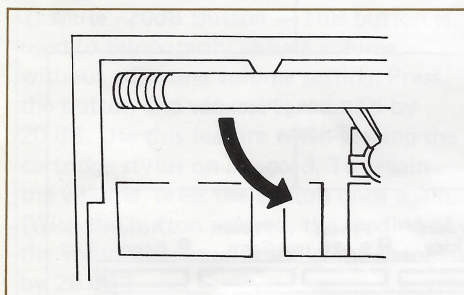


Fig. 7

A terminal connection is provided for attaching an external antenna if needed.

FM — An efficient 300 ohms T-shape antenna is supplied with your unit. Connect the antenna to the **FM** terminals and run the wire along the wall behind the unit for good reception.

External Antenna — If you live in an urban area with severe FM multipath interference, near steel structures, or in suburban areas with weak signal reception, an external antenna may be required. Terminal connections for both 75 ohms co-ax cable and 300 ohms connections are provided.

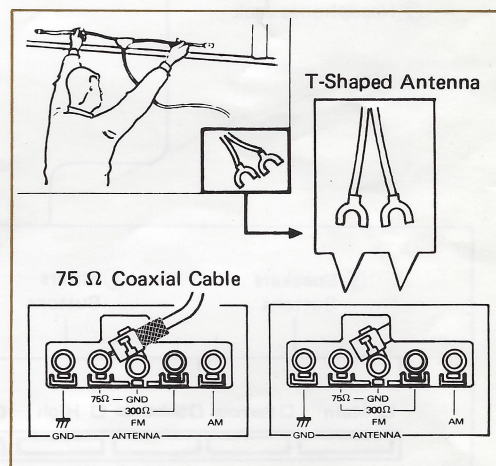


Fig. 8

AC Outlets

There are two AC outlets Switched and Unswitched that allow connections of additional audio components. The **Unswitched** outlet should be used for

a component such as turntable which can operate independently of the stereo receiver even if it is turned off. (100W Max)
The **Switched** outlet accommodates com-

ponents such as an 8 track tape deck that does not have an independent means of power switching. The component will automatically shut off when the receiver is shut off. (100W Max)

Headphone (Optional)

For private listening you can connect a low impedance stereo headphone to the **Headphone** jack on the front panel.

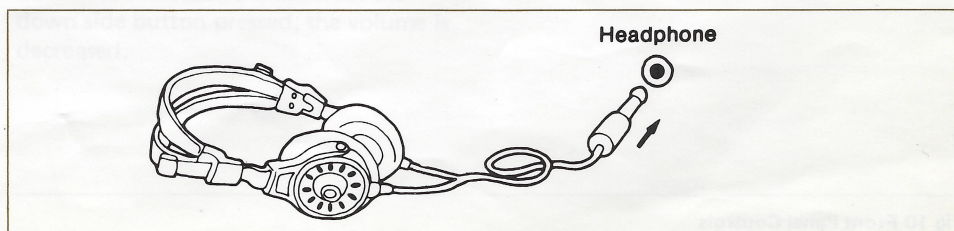


Fig. 9

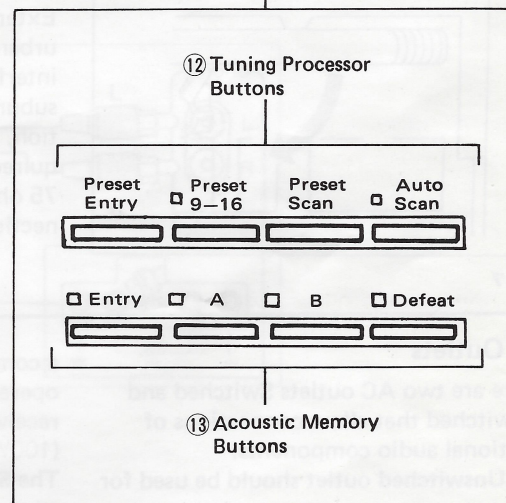
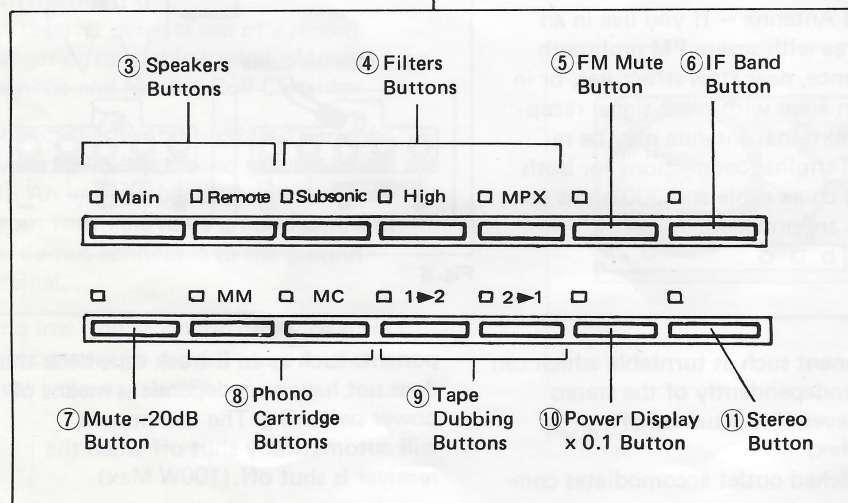
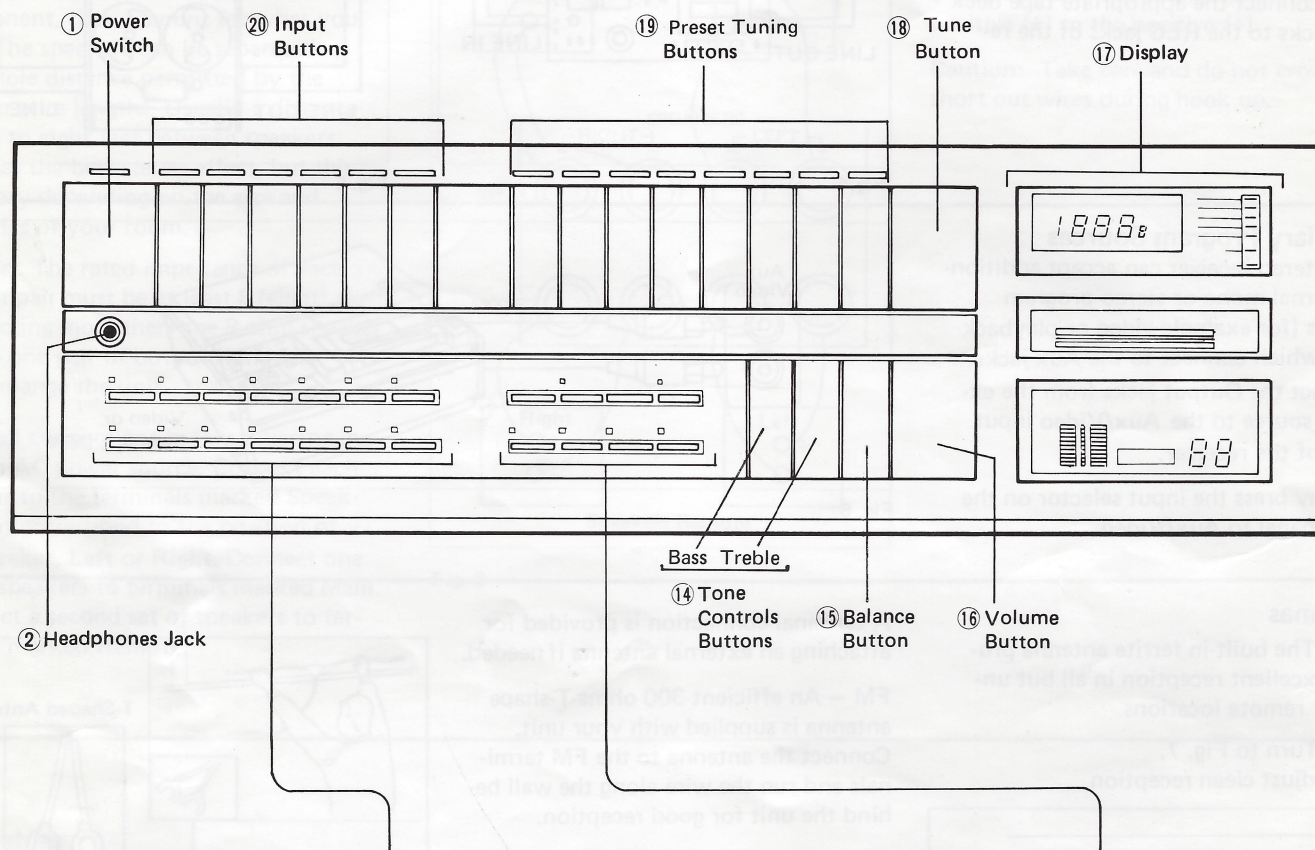


Fig 10 Front Panel Controls

Controls

- ① **Power Switch** — Press to turn unit on and wait about 5 seconds. Press again to turn unit off.
- ② **Headphones** — For private listening, turn speaker switch to and connect any 8 Ohms impedance headphones to this jack.
- ③ **Speaker Buttons** — Allows selection of the desired speaker system, **Main** or **Remote**, **Main plus Remote** or **Off**.
- ④ **Filter Buttons** — Press to activate the filters. Press again, the filter turns off.
Subsonic: Use when sound is distorted due to record warp.
High: Use to reduce unwanted high frequency sounds such as tape hiss or record scratches.
MPX: Use when noise is heard in FM Stereo signals.
- ⑤ **FM Mute Button** — Eliminates background noises between FM stations. Set the switch to **Off** when receiving weak stations.
- ⑥ **IF Band Button** — Press to **Wide** mode in good reception areas and for lowest distortion. Press to **narrow** mode to sharpen FM station selectivity in high interference areas.
- ⑦ **Mute -20dB Button** — This button is used to temporarily reduce volume without adjusting volume setting. Press the button and volume is reduced by 20 dB. Use this feature when placing the cartridge stylus on a record. To regain the volume, press the button once again. (With the button pressed, the reading of the volume/attenuator indicator changes by 20 dB.)
- ⑧ **Phone Cartridge Buttons** — Press the **MC** button when using MC (Moving Coil) type cartridge. For MM (Moving Magnetic) type cartridge, press the **MM** button.
- ⑨ **Tape Dubbing Buttons** — Permits duplication of a tape recording between two connected tape recorders while listening to program source.
1 → 2: Press this button when dubbing from tape-1 to tape-2.
2 → 1: Press this button when dubbing from tape-2 to tape-1.
- ⑩ **Power Display x0.1 Button** — Press when the power display output cannot be read at low volume settings. With the button pressed, the power display indicates the output (w) of 1/10 (for example: 85W → 8.5W). Press the button once again, the power display indicates the normal output.
- ⑪ **Stereo Button** — Press for listening to FM programs in stereo mode. Press again for listening in monaural mode. When FM stereo signal is weak and noise is heard, press the button to off, **Mono** position.
- ⑫ **Tuning Processor Buttons** — Used to preset the desired stations. Also used for automatic tuning and for scanning the frequencies between preset stations. (See item operation.)
- ⑬ **Acoustic Memory Buttons** — Stores two different acoustic settings. The defeat switch is used to override the stored acoustic condition and obtain the flat frequency response. (See item operation.)
- ⑭ **Tone Controls Buttons** — Use these buttons for selecting your desired tone quality. Press the + up side bass or treble button and the bass or treble sound will be emphasized.
Press the - down side button to deemphasize the bass or treble sound.
Bass: For low frequency sounds.
Treble: For high frequency sounds.
- ⑮ **Balance Button** — This button is used to correct any imbalance of volumes between the left and right speakers. Press the up side button to increase the volume level of the L channel. Press the down side button and the volume level of the right channel will be increased.
Note: When the L or R channel button is kept pressed, the volume level of the opposite channel is reduced by 20 dB. The sound of the opposite channel will not fade out completely.
- ⑯ **Volume Button** — Press the up side button to increase volume. With the down side button pressed, the volume is decreased.
- ⑰ **Display** — The built-in LED and fluorescent tube display the following operating conditions. (See Fig. 11)
■ Tuned Frequency
■ Memory Indicator
■ Stereo Indicator
■ Lock Indicator
■ Power Output
■ Tone (Bass and Treble)
■ Volume and balance
- ⑱ **Tune Buttons** — Press the up side of button to change the tuning frequency to higher direction and press the down side of button to change the lower direction.
- ⑲ **Preset Tuning Button** — Use to call up preset station in the Tuner Memory.
- ⑳ **Input Buttons** — Use these buttons to select the desired program sources.

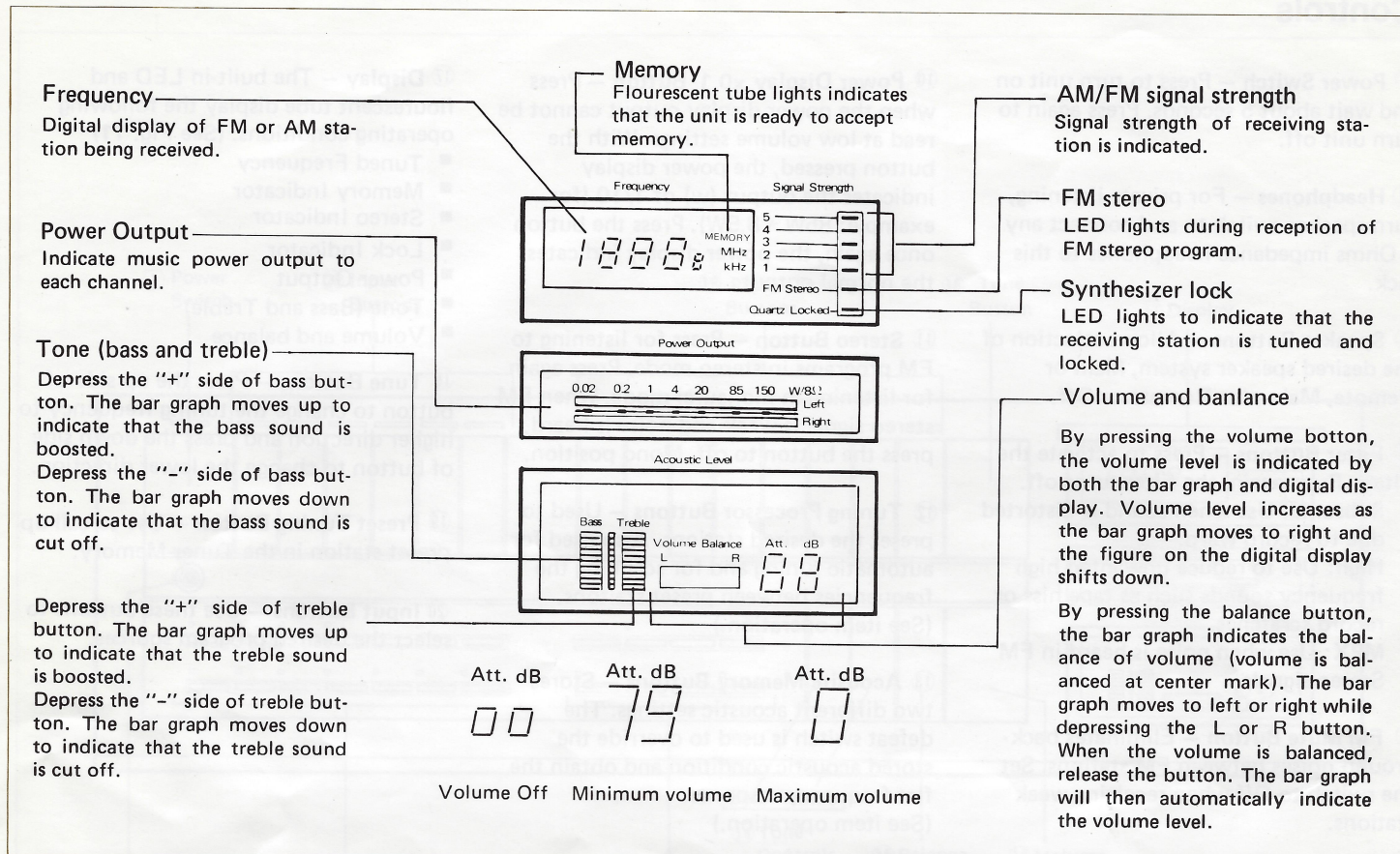


Fig. 11 Details of display unit

Operation

General Preparation:

- ① **Turn on the power** — Press the power switch.
- ② **Volume Control** — Set to low volume by pressing down side of button.
- ③ **Select the desired speaker system**—
 - Press **Main** button to operate main speaker system.
 - Press **Remote** button to operate remote speaker system.
 - Press both buttons to operate two speaker systems simultaneously.
 - Release both buttons for headphone listening.

Caution: When selecting speaker system, do not increase the volume to avoid damage to speakers.

- ④ **Press the Input desired program source** —
 - FM — Listening to FM broadcast.
 - AM — Listening to AM broadcast.
 - Phono — Playing phono records.
 - Aux/Video — Press this button for operating auxiliary device or video unit connected to the Aux terminal.

rating auxiliary device or video unit connected to the **Aux** terminal.
Tape 1 — Playing tape with tape deck connected to the Tape 1 input terminal.
Tape 2 — Playing tape with tape deck connected to the Tape 2 input terminal.

Note: If an input switch (FM, AM, Phone, Aux/Video) is selected before pressing the tape monitor switch, (Tape 1 Tape 2) the monitor switch will override the input switch.

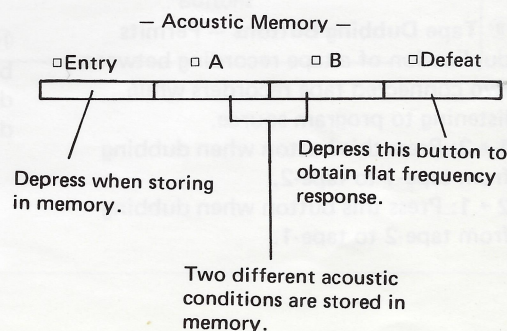
- ⑤ **Volume Adjustment** — Press the up side of button continuously until the desired volume is obtained.

- ⑥ **Acoustic Memory** — The unit has its own built-in micro-computer to store the conditions of tone (Bass and Treble) and filter (Subsonic and High). With these functions combined, two different acoustic conditions can be stored in the memory so that the desired acoustic condition is selected immediately according to the program source or the type of speakers to be used.
 - a. By using the tone and filter switches, adjust the tone quality to suit your preference.

- b. Press the **Entry** Switch, then press the acoustic **A** or **B** button while the indicator on the upper left is On. (In this way, an acoustic condition on the display is stored in the memory.)
- c. Depress **Defeat** button to obtain flat frequency response.

Note: Once the acoustic conditions are stored, they are not cleared even when the power is Off.

The preset acoustic conditions can be called up immediately by setting the power switch to On and pressing acoustic **A** or **B** button.



Radio

⑦ AM/FM reception —

The AM/FM Quartz Synthesized Tuner Section PLL (phase locked loop) technology with micro-computer is a brand new development. This unit offers you three means to select the stations.

First, you may use the "Manual Tuning" to step up and down with 200 kHz interval in FM and 10 kHz interval in AM. Second, you may use "Auto Tuning" to move up and down to the next available station. Third, you may select up to 16 different stations (AM plus FM in any combination) and commit them to the tuner memory. You can then recall any of the 16 stations with the light touch of a signal button. The procedures for the above are explained below.

- Press desired wave band AM or FM input button.

Manual Tuning —

- Press the upper side of the tune button to change the tuning frequency to higher direction in step of 10 kHz for AM and 200kHz for FM.
- Press the lower side of the tune button to change the tuning frequency to lower direction in the same steps.
- When the tune button is pressed continuously, the tuning frequency will change rapidly with the speed of 100 mill-second/step to allow large frequency modification quickly.

Automatic Scan —

- Press the **Auto Scan** button.
- Press the upper side of the **Tune** button. The tuning frequency begins to scan higher direction automatically and stops at the next available station.
- Press the lower side of the **Tune** button. The tuning frequency begins to scan lower direction automatically and stops at the next available station.

Storing the preset station in memory —

Eight preset tuning are provided to store 16 AM/FM stations in the memory bank. After receiving desired AM or FM station, press preset entry switch. "Memory" indication lights in the frequency readout fluorescent tube to indicate that the unit is ready to accept the station to memory. Then press one of the 8 preset switches on which you want to store the received station. To store another station in the memory, repeat the same procedure by pushing another switch. After finishing 8 station preset, press preset 9 — 16 switch.

Then additional 8 stations can be preset in the same switches by following same procedure.

Preset Scan —

By pressing this switch, the unit begins to call back the preset stations in order that they are stored in the memory bank. It stops at each preset station for 5 seconds and moves to the next preset station. If you want to stop at the desired program, press the corresponded preset switch.

Calling the Memory — The preset station can be called up from the memory by simply pressing the corresponding preset station switches. When calling up a preset station from among the 1 — 8 stations, depress the corresponding preset switch. When calling up a present station from among the 9 — 16 stations, first depress the **Preset 9 — 16** switch and while holding it down, press the desired switch.

Last Channel Memory Facility —

When you change the function from your listening wave band to another (for example, from FM to AM, Phono or Aux) and return to the same function, or you turn the **Power Switch** off and again turn on, you can hear same station which you are listening to before.

Memory Back-up Facility —

Once you store the stations and acoustic memory, the memory is protected by a built-in super capacitor and back up transformer especially provided for memory back up.

When the power is off for a long period of time, or if the AC plug is removed from the wall outlet or power failure occurs, the preset stations and acoustic memory will be retained for a period of approximately 10 days.

Phono

⑧ Press **Phono Cartridge** button that matches the type of cartridge to be used.

- For MM (Moving Magnetic) type cartridge, press the **MM** button.
- For MC (Moving Coil) type cartridge, press **MC** button.

Tape Decks

⑨ **Tape Dubbing —** Dubbing of tape programs is possible by using two tape decks connect to this unit.

- Press tape dubbing **1 ► 2** button when you wish to record a tape program on tape deck 1 into tape deck 2.
- Press **2 ► 1** button when you wish to record a tape program on tape deck 2 into tape deck 1.
- When you are dubbing **1 ► 2** or **2 ► 1** you can hear any source by pressing the input button.

Hints for Good Performance

FM Reception

Compared with AM, FM is of a higher quality transmission with less noise and less interference.

Multi-Path Phenomenon (Fig. 12)

All FM waves are directional (more directional than AM), having a tendency to beam in a straight line. When hitting an obstacle, they simply reflect. Antennas receive the waves reflected by nearby obstacles (such as mountains or tall buildings) as well as the wave beamed direct from the station. The result is a multi-path phenomenon, that also causes "ghosting" on TV screens. In FM, reflection can cause distortion and poor stereo separation. It is recommended that an FM antenna with good directionality be used to minimize such distortion.

Weak Antenna Input

When antenna input is weak, the signal-to-noise ratio may deteriorate. The cause may be for instance, an improper antenna location, or using a low-gain T-shaped antenna which should be replaced with an outdoor antenna.

Nearby Electric Appliances

Pulsive noises, caused by electrical sparks, may be mixed in with audio signals. Sources of such noises could be automobiles, ignition plugs, electric trains, high-tension lines, fluorescent lamps, welding machines, etc. Distortions can be minimized by locating the antenna as far away as possible from such sources of noise.

AM Reception

Weak Stations (Fig. 13)

When the unit is tuned to a weak AM station, you hear lower volume than when it receives a strong one. If the unit is used in a steel and concrete building, AM volume may be increased by placing it next to a window. For best AM reception install an outdoor AM antenna.

Noise Distortion

AM noise can be caused by any of the following:

Interference causes an audible high-pitched beat. An outdoor antenna may increase the noise level of a desired station by accidentally pulling in interference from other stations. Antenna alignment therefore is necessary. Booming hum noise is often caused by the power source. It may be reduced by moving the unit away from other electric appliances. Proper grounding may also be effective in reducing hum.

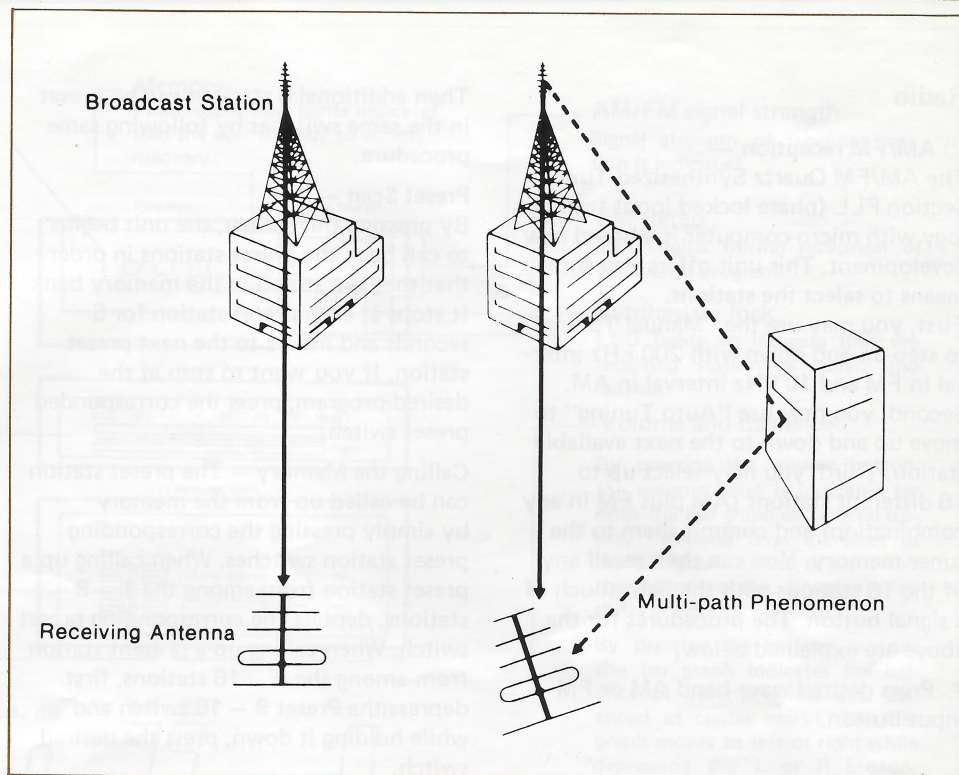


Fig. 12

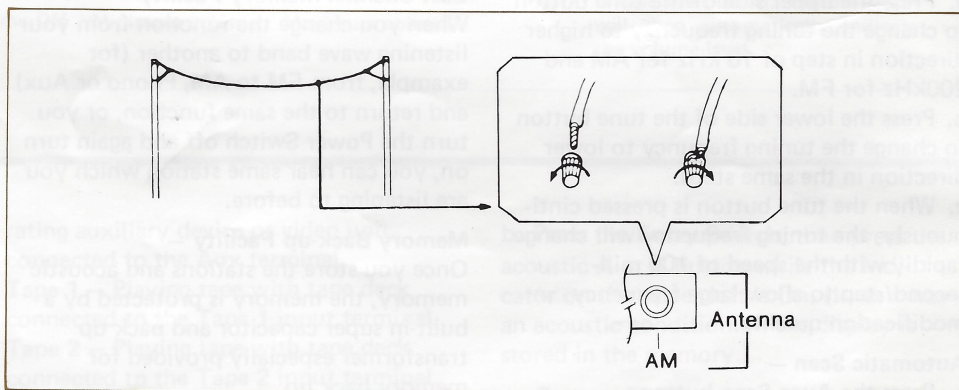


Fig. 13

Buzz noise may be caused by fluorescent lamps and other electric appliances, or by natural phenomena such as thunder. Installation of a noise-suppression device may be effective. Complete elimination of AM buzz is usually difficult, but you can make it less audible with the Treble tone control on your amplifier.

Listening in the Privacy of Your Home

The acoustic characteristic of your audio system varies depending upon the frequency characteristics of devices such as cartridge, speaker, etc., the configuration of listening room, locations of speaker system, and the characteristic of human ear.

Using the tone control, adjust the tonal quality to suit your listening preference. If the volume level is too low, the result is a lack of high and low frequency sounds because of the characteristic of human ear. This can be corrected by using the tone control.

The tonal quality also greatly varies with the configuration of listening room or location of speaker system.

To improve low frequency sound, select the distance between the speaker system and the wall of listening room or place the speaker system on a rigid stand such as a concrete block.

To improve high frequency sound, use an appropriate carpet or curtains in your listening room. Changing the arrangement of furniture will also vary the tonal quality.

Keep these precautions in mind to obtain the natural tonal quality, and you will surely enjoy superb audio life.

Finally, headphones ensure the ultimate in private listening enjoyment.

Caution: AM Connection shows for illustration only, for proper connection see the Safety Instructions.

Circuit Protection

This fuses installed in the set are rated as follows:

Primary Power Fuse: 6.3 amperes, slow blow type.

Secondary Power Fuse: 630 millamperes, slow blow type.

- Whenever you must replace fuse, consult with your nearest JCPenney store or JCPenney Product Service.

Trouble Shooting

Problem	Cause	Remedy
No sound.	Unit not plugged in. Power not on. Speakers not connected.	Plug in unit. Push Power button to On . Check speaker connections.
Poor reception.	Station not tuned properly. Antenna not connected.	Tune station to maximum reception. Outdoor Antenna may be required. Check Antenna connections.
No audio when record is played.	Input selector not in Phono. Speakers not connected. Receiver not on.	Set Input selector to Phono . Check Speaker connection. Push Power button to On .
No audio when tape is played.	Tape selector not on.	Switch Tape selector to appropriate selection.

Maintenance

General

Keep your records free of dust and finger marks by cleaning records regularly. A cleaning kit is available at JCPenney for your convenience.

Keep records and tapes stored vertically in their protective jackets and away from heat to avoid damage.

Cleaning

Warning: To prevent fire or shock hazard, disconnect your unit from the AC power source when cleaning.

The finish on the receiver may be cleaned with a dust cloth and cared for as other fine furniture. Use caution when cleaning and wiping the plastic parts. A damp cloth and mild soap may be used on the front panel when necessary.

Service

Should service be required contact your nearest JCPenney store, Catalog desk or Product Service center. Refer to the Product Service Number located on the back of the cabinet when you contact JCPenney for service.

Glossary

The following is an explanation of terms used in the audio industry. The glossary is arranged in alphabetical order:

Acoustics — Generally, the study of how sound waves behave. More specifically the characteristics of a room or auditorium that affect the behavior of sound produced within it.

Automatic Frequency Control (AFC) — Prevents drift on FM and FM stereo tuners.

Ambience — Ambience refers to the total sound field in which we are immersed. The ambience includes the direct and reflected sound from one or more sound sources.

Amplifier — An electronic device which receives an audio input, provides gain, and supplies resultant audio output signals to drive its speaker system.

Balance — Relative volume, as between bass and treble or different voices and instruments. Also applies to relationships between left and right channels in stereo.

Bass Control — Increases or decreases loudness of the low tones. An increase of frequencies below 500 Hz is known as bass boost. Reduction of low tone loudness is known as bass cut or attenuation.

Channel — A complete and independent sound path. For example, the left channel contains all the circuitry and transducers which results in sound coming from the left side.

Decibel (dB) — The decibel, abbreviated dB, is a logarithmic measure of relative signal strengths. A 6 dB difference in signal strengths is equivalent to a four times difference in power (two times difference in voltage).

Deck — A term usually applied to a tape machine having no built-in power amplifiers and loudspeakers of its own, but intended rather for feeding a separate amplifier and speaker system (as in a component installation).

Distortion — Unwanted alteration of signal to be reproduced.

Dolby NR — A noise-reduction system which boosts low-level, high frequency signals while recording and reduces their level in a complementary manner upon reproduction.

Frequency Modulation (FM) —

The method whereby the frequency of a carrier is made to vary in proportion to the signal strength of the intelligence. It is used in FM radio transmission.

Frequency Response — The range of audio frequencies from low to high that may be reproduced or processed by any audio device; the limits are expressed in hertz or kilohertz along with a specification of flatness (in dB) for the range. (e.g. 20 – 20,000 Hz \pm 3 dB).

Hertz (Hz) — A frequency measurement abbreviated Hz. Audio frequency range is 20 Hz to 20 kHz.

High Filter — Circuitry often used to cut off amplifier response to audio frequencies above 15 kHz. It minimizes FM stereo hiss and scratch sounds on records.

Hum — The undesirable reproduction of signals related to the 60 Hz AC power line; hum is perceived as a low-pitched steady tone.

Impedance — That rating, usually of a loudspeaker, which specifies the load it imposes on an amplifier. Nominal impedance is the average rating over a band of frequencies, typically the midrange.

Integrated Circuit — A miniaturization of a complex electronic circuit to a thumb-nail-sized device resulting in identical performance to the original large circuit. Also called a CHIP.

Jack — The receptacle that accepts a plug.

Kilohertz (kHz) — One thousand hertz. Thus 3 kHz means 3000 Hz; a unit of frequency.

Loudness Switch — A switch which enables circuitry in an amplifier to compensate for the deficiency in bass response of the human ear at low volume levels. Bass response is boosted slightly when loudness is increased.

Loudspeaker — A device which converts electrical power into sound energy.

Low Filter — Circuitry used to cut off amplifier-to-audio frequencies below 30 Hz; reduces low frequency hum and rumble of turntable and tape deck.

Midrange — Those frequencies which lie within the range of 400 to 3500 Hz.

Monophonic — A single channel sound system; also called mono. A monophonic system can have the same frequency response, power, etc. of any other system, but it cannot produce width or depth to

the sound image. Essentially, the sound is perceived as coming from a single point, the loudspeaker.

Noise — Any sounds which are not harmonically related to the signal and are added subsequently by the recording or playback equipment. Noise includes hiss, crackles, hum, rumblings, ticks and pops, etc.

Noise Reduction Circuit — Any circuitry which has for its purpose the reduction of noise in the sound channel. One of the most widespread approaches is the Dolby NR.

Octave — The musical interval between two pitches whose fundamental frequencies differ by a ratio of 2 to 1. Thus, 440 and 880 Hz constitute an octave's interval.

Perspective — In a recording, the quality of depth or apparent relative distance between the listener and the sound sources. The impression that one source is located behind another.

Phase — The cyclical angle between two signals of equal frequency.

Phono Cable — Cable that is used to interconnect high fidelity components.

Power Cord — Cord for connecting a component to an external power source, such as a 120 V AC line.

Preamplifier — Preliminary amplifying stage used to raise the voltage of signals prior to application to an amplifier section.

Receiver — The combination of a tuner, preamplifier, and power amplifier in a single piece of equipment.

Resonance — The frequency which will cause an object to vibrate.

RIAA — Record Industry Association of America.

RMS (Root Mean Square) — An engineering term which describes the effective value of a pure sine wave voltage, rather than the peak value of the wave. In audio, often misapplied to power output of amplifiers to indicate the continuous power output in watts.

Rumble — Low frequency sound (30 Hz to 50 Hz) mechanically transmitted by a turntable and superimposed on the audio.

Sensitivity — The measure of a tuner's ability to receive and amplify a weak signal without introducing excessive noise; expressed in microvolts (μ V) or millionths of a volt.

Glossary

Separation — The quality of separateness between the individual channels of a multichannel sound system. It is related to cross talk between the channels. Separation frequently refers to the apparent isolation between the sound images.

Signal-to-Noise Ratio (S/N) — The span measured in decibels of signal intensity between a device's overload point at the upper limit and its background noise at the lower limit.

Stereo — Two-channel. Sound coming from two or more speakers with each speaker or set of speakers emitting a different part of the overall sound. Adds a dimensional effect to the sound.

Stereophonic Recording — Sound recording with depth. A stereo recording made with two or more microphones and channels.

Tape Monitor — A switch in an amplifier or tuner which allows monitoring the quality of a recording while it is being taped.

Total Harmonic Distortion Level (THD) — Expressed as a percentage.

Transistor — A solid state device made with either germanium or silicon which can serve the same functions as vacuum tubes. Has the advantages of compactness, instant-on, long life, reduced heat, and lower power consumption.

Treble Control — Increases or decreases loudness of the high tones. An increase of frequencies above 2000 Hz is known as treble boost. Reduction of high tone loudness is known as treble cut or attenuation.

Tweeter — A loudspeaker designed to create high frequency sounds. Generally a small cone speaker or horn speaker.

VU Meter — A recording level meter that measures signal strength according to a specified standard. Used to measure recording levels, output levels and receiving levels.

Watt — Unit of electrical power.

Wavelength — In acoustics it is the distance occupied by one cycle of a repetitive sound traveling through the air at a velocity of about 1,100 feet per second. A 1,100 Hz tone has a wavelength of one foot.

Woofer — A loudspeaker design to reproduce low frequencies; generally a large cone speaker.

Wow — A low frequency sound (flutter) caused by an improperly balanced turntable or warped record.

Glossary

Acoustic Impedance — A recording level that is a function of the acoustic impedance of the medium. Used to measure the acoustic impedance of a medium.

Amplitude — The height of a wave, measured from the zero level to the peak. The amplitude of a wave is a measure of its energy.

Bandwidth — The range of frequencies that a system can handle. The bandwidth of a system is a measure of its capacity.

Carrier Frequency — The frequency of a wave that is used to carry a signal. The carrier frequency of a wave is a measure of its energy.

Channel — A path through which a signal travels. The channel of a signal is a measure of its capacity.

Circuit Breaker — A device that automatically opens a circuit when the current exceeds a predetermined value. The circuit breaker of a system is a measure of its capacity.

Coaxial Cable — A type of cable that consists of two concentric conductors. The coaxial cable of a system is a measure of its capacity.

Decibel (dB) — A unit of measurement for the power level of a signal. The decibel of a signal is a measure of its energy.

Distortion — The change in the shape of a wave. The distortion of a wave is a measure of its energy.

Dynamic Range — The range of amplitudes that a system can handle. The dynamic range of a system is a measure of its capacity.

Electromagnetic Interference (EMI) — The interference caused by electromagnetic waves. The EMI of a system is a measure of its capacity.

Frequency — The number of cycles of a wave per second. The frequency of a wave is a measure of its energy.

Gain — The increase in the amplitude of a signal. The gain of a signal is a measure of its energy.

Impedance — The opposition to the flow of current. The impedance of a system is a measure of its capacity.

Interference — The change in the shape of a wave. The interference of a wave is a measure of its energy.

Isolation — The ability to prevent a signal from being affected by other signals. The isolation of a system is a measure of its capacity.

Latency — The delay between the input and output of a system. The latency of a system is a measure of its capacity.

Loss — The decrease in the amplitude of a signal. The loss of a signal is a measure of its energy.

Modulation — The process of combining a signal with a carrier wave. The modulation of a signal is a measure of its energy.

Noise — The unwanted signals that are present in a system. The noise of a system is a measure of its capacity.

Output — The signal that is produced by a system. The output of a system is a measure of its capacity.

Power — The rate at which energy is transferred. The power of a system is a measure of its capacity.

Resonance — The condition in which a system oscillates with maximum amplitude. The resonance of a system is a measure of its capacity.

Signal — The information that is transmitted. The signal of a system is a measure of its capacity.

Speed of Light — The speed at which light travels. The speed of light of a system is a measure of its capacity.

Throughput — The amount of data that is transferred. The throughput of a system is a measure of its capacity.

Waveform — The shape of a wave. The waveform of a signal is a measure of its energy.

$$\begin{aligned} 1 &= 95.1 \\ 2 &= 98 \\ 3 &= 103.7 \\ &= 106.5 \\ &= 107.3 \end{aligned}$$

Glossary

Acoustic Impedance — A recording level that is a function of the acoustic impedance of the medium. Used to measure the acoustic impedance of a medium.

Amplitude — The height of a wave, measured from the zero level to the peak. The amplitude of a wave is a measure of its energy.

Bandwidth — The range of frequencies that a system can handle. The bandwidth of a system is a measure of its capacity.

Carrier Frequency — The frequency of a wave that is used to carry a signal. The carrier frequency of a wave is a measure of its energy.

Channel — A path through which a signal travels. The channel of a signal is a measure of its capacity.

Circuit Breaker — A device that automatically opens a circuit when the current exceeds a predetermined value. The circuit breaker of a system is a measure of its capacity.

Coaxial Cable — A type of cable that consists of two concentric conductors. The coaxial cable of a system is a measure of its capacity.

Decibel (dB) — A unit of measurement for the power level of a signal. The decibel of a signal is a measure of its energy.

Distortion — The change in the shape of a wave. The distortion of a wave is a measure of its energy.

Dynamic Range — The range of amplitudes that a system can handle. The dynamic range of a system is a measure of its capacity.

Electromagnetic Interference (EMI) — The interference caused by electromagnetic waves. The EMI of a system is a measure of its capacity.

Frequency — The number of cycles of a wave per second. The frequency of a wave is a measure of its energy.

Gain — The increase in the amplitude of a signal. The gain of a signal is a measure of its energy.

Impedance — The opposition to the flow of current. The impedance of a system is a measure of its capacity.

Interference — The change in the shape of a wave. The interference of a wave is a measure of its energy.

Isolation — The ability to prevent a signal from being affected by other signals. The isolation of a system is a measure of its capacity.

Latency — The delay between the input and output of a system. The latency of a system is a measure of its capacity.

Loss — The decrease in the amplitude of a signal. The loss of a signal is a measure of its energy.

Modulation — The process of combining a signal with a carrier wave. The modulation of a signal is a measure of its energy.

Noise — The unwanted signals that are present in a system. The noise of a system is a measure of its capacity.

Output — The signal that is produced by a system. The output of a system is a measure of its capacity.

Power — The rate at which energy is transferred. The power of a system is a measure of its capacity.

Resonance — The condition in which a system oscillates with maximum amplitude. The resonance of a system is a measure of its capacity.

Signal — The information that is transmitted. The signal of a system is a measure of its capacity.

Speed of Light — The speed at which light travels. The speed of light of a system is a measure of its capacity.

Throughput — The amount of data that is transferred. The throughput of a system is a measure of its capacity.

Waveform — The shape of a wave. The waveform of a signal is a measure of its energy.